

What is claimed is:

1. A device for evaluating a fluid inducer, the fluid inducer having an inducer valve operable to open in response to a load, the device comprising:
 - a fluid conduit for pressurizing the fluid inducer with a fluid;
 - a pressure sensor that senses the pressure in the fluid conduit;
 - an actuator for applying the load to the fluid inducer; and
 - a load sensor that determines the load in response to the sensed pressure.
2. The device according to claim 1, further comprising:
 - a linear potentiometer for determining an amount of travel experienced by the inducer in response to the load.
3. The device according to claim 1, wherein the pressure sensor comprises:
 - an inlet pressure sensor disposed upstream of the inducer valve to sense the pressure in the fluid conduit upstream of the inducer valve; and
 - an outlet pressure sensor disposed downstream of the inducer valve to sense the pressure in the fluid conduit downstream of the inducer valve.
4. The device according to claim 1, further comprising:
 - an inlet valve disposed upstream of the inducer valve and the pressure sensor to control an amount of fluid entering the fluid conduit.
5. The device according to claim 1, further comprising:
 - an outlet valve disposed downstream of the inducer valve and the pressure sensor to control an amount of fluid exiting the fluid conduit.

6. The device according to claim 1, further comprising:
a controller configured to modulate the actuator and receive transmissions from the actuator, the pressure sensor, and the load sensor, wherein the controller further pressurizes the fluid inducer with the fluid, determines a fluid integrity of the fluid inducer in response to sensing the pressure of the fluid, and determines a load response of the fluid inducer in response to the load.
7. An apparatus for evaluating a fluid inducer, the fluid inducer having an inducer valve operable to open in response to a load, the apparatus comprising:
means for pressurizing the fluid inducer with a fluid;
means for determining a fluid integrity of the fluid inducer in response to sensing the pressure of the fluid; and
means for determining a load response of the fluid inducer in response to a load being exerted upon the fluid inducer.
8. The apparatus according to claim 7, further comprising:
means for determining if the fluid inducer has a leak; and
means for determining a location of the leak in response to determining that the fluid inducer has a leak.
9. The apparatus according to claim 8, further comprising:
means for pressurizing the fluid inducer prior to the inducer valve; and
means for determining the inducer valve has the leak in response to a sensed pressure change in the fluid.
10. The apparatus according to claim 7, wherein the means for determining the load response further comprises:
means for determining a cracking pressure.

11. The apparatus according to claim 10, further comprising:
 - means for pressurizing the fluid inducer upstream of the inducer valve;
 - means for modulating the load upon the fluid inducer; and
 - means for determining whether the inducer valve is open in response to the load.
12. The apparatus according to claim 11, further comprising:
 - means for sensing an inlet pressure at a location upstream of the inducer valve;
 - and
 - means for determining the inducer valve is open in response to a reduction of the sensed inlet pressure.
13. The apparatus according to claim 11, further comprising:
 - means for sensing an outlet pressure at a location downstream of the inducer valve; and
 - means for determining the inducer valve is open in response to an increase in the sensed outlet pressure.
14. The apparatus according to claim 7, wherein the means for determining the load response further comprises:
 - means for determining a wide open pressure.
15. The apparatus according to claim 14, further comprising:
 - means for generating a flow of fluid through the fluid inducer;
 - means for modulating the load upon the fluid inducer; and
 - means for determining the load at which an increase in the load does not result in an increase in the flow.

16. The apparatus according to claim 7, wherein the means for determining the load response further comprises:
 - means for determining a maximum travel.
17. The apparatus according to claim 16, further comprising:
 - means for modulating a load upon the fluid inducer;
 - means for sensing travel of the fluid inducer in response to the load; and
 - means for determining the travel at which an increase in the load does not result in an increase in the travel.
18. The apparatus according to claim 7, further comprising:
 - means for determining an average load response, wherein the average load response is calculated in response to determining the load response a predetermined number of times.
19. The apparatus according to claim 7, further comprising:
 - means for determining a fatigue value, wherein the fatigue value is determined in response to evaluating the fluid inducer until failure.
20. The apparatus according to claim 7, further comprising:
 - means for storing measurements associated with the evaluation of the fluid inducer to a table.
21. The apparatus according to claim 20, further comprising:
 - means for sensing an identity of the fluid inducer and accessing the table associated with the identity.
22. The apparatus according the claim 21, further comprising:
 - means for generating the table in response to sensing the identity for a first time.

23. The apparatus according to claim 20, further comprising:
means for extrapolating a performance trend of the fluid inducer in response to the table.
24. A method of evaluating a fluid inducer, the fluid inducer having an inducer valve operable to open in response to a load, the method comprising:
pressurizing the fluid inducer with a fluid;
determining a fluid integrity of the fluid inducer in response to sensing the pressure of the fluid; and
determining a load response of the fluid inducer in response to a load being exerted upon the fluid inducer.
25. The method according to claim 24, further comprising:
determining if the fluid inducer has a leak; and
determining a location of the leak in response to determining that the fluid inducer has a leak.
26. The method according to claim 25, further comprising:
pressurizing the fluid inducer prior to the inducer valve; and
determining the inducer valve has the leak in response to a sensed pressure change in the fluid.
27. The method according to claim 24, wherein determining the load response further comprises:
determining a cracking pressure.
28. The method according to claim 27, further comprising:
pressurizing the fluid inducer upstream of the inducer valve;
modulating the load upon the fluid inducer; and
determining whether the inducer valve is open in response to the load.

29. The method according to claim 28, further comprising:
 - sensing an inlet pressure at a location upstream of the inducer valve; and
 - determining the inducer valve is open in response to a reduction of the sensed inlet pressure.
30. The method according to claim 28, further comprising:
 - sensing an outlet pressure at a location downstream of the inducer valve; and
 - determining the inducer valve is open in response to an increase in the sensed outlet pressure.
31. The method according to claim 24, wherein determining the load response further comprises:
 - determining a wide open pressure.
32. The method according to claim 31, further comprising:
 - generating a flow of fluid through the fluid inducer;
 - modulating the load upon the fluid inducer; and
 - determining the load at which an increase in the load does not result in an increase in the flow.
33. The method according to claim 24, wherein determining the load response further comprises:
 - determining a maximum travel.
34. The method according to claim 33, further comprising:
 - modulating a load upon the fluid inducer;
 - sensing travel of the fluid inducer in response to the load; and
 - determining the travel at which an increase in the load does not result in an increase in the travel.

35. The method according to claim 24, further comprising:
determining an average load response, wherein the average load response is calculated in response to determining the load response a predetermined number of times.
36. The method according to claim 24, further comprising:
determining a fatigue value, wherein the fatigue value is determined in response to evaluating the fluid inducer until failure.
37. The method according to claim 24, further comprising storing measurements associated with the evaluation of the fluid inducer to a table.
38. The method according to claim 37, further comprising sensing an identity of the fluid inducer and accessing the table associated with the identity.
39. The method according the claim 38, further comprising generating the table in response to sensing the identity for a first time.
40. The method according to claim 37, further comprising extrapolating a performance trend of the fluid inducer in response to the table.